



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,759	09/12/2003	Andrea Liebmann-Vinson	P-5843	5974

46851 7590 02/01/2007  
DAVID W. HIGHET  
BECTON, DICKINSON AND COMPANY  
1 BECTON DRIVE, MC110  
FRANKLIN LAKES, NJ 07417

EXAMINER
----------

STOICA, ELLY GERALD

ART UNIT	PAPER NUMBER
----------	--------------

1647

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/660,759	<b>Applicant(s)</b> LIEBMANN-VINSON ET AL.	
	<b>Examiner</b> Elly-Gerald Stoica	<b>Art Unit</b> 1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 20-27 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20,21 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/22/2004, 12/17/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of the species: **silane, protein and extracellular matrix** in the reply filed on 10/24/2006 is acknowledged.

### ***Status of the claims***

2. The claims 20-27 are pending. Claim 22 is withdrawn for being drawn to non-elected subject matter.

### ***Specification***

3. The disclosure is objected to because of the following informalities: in [0040] "selecting" should be substituted with "selectins".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 20-21 and 23-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The independent claim 20 fails to adequately point out the interrelationship between the elements recited: it is not clear how the elements from a)-c) relate to each other.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20-21 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banes AJ (US Pat. 4,822,741, 04/18/1989) in view of Stitt et al. (US Pat 5,567,598, 10/22/1996), (both cited by the Applicant).

The claims are drawn to a device comprising a surface with enhanced cell-adhesive properties, said surface comprising:

- a) a polymeric matrix (Claim 20) that comprises silicone (claims 23-24) (i.e., polydimethyl siloxane-PDMS);
- b) at least one oxygen-sensing compound that is luminescent (claim 25);

Art Unit: 1647

c) a non-mechanical self assembled monolayer comprising at least one reactive group (i.e. silane) (Claim 21); and

d) at least one cell-adhesive molecule (i.e., a protein that is an extracellular matrix molecule) coupled to said non-mechanical self- assembled monolayer comprising via said at least one reactive group (claims 26-27).

Banes teaches a polyorganosiloxane composition for cell culture of mammalian cells having a biocompatible surface thereon, (page 2, right column lines 53-68) after treatment with a silane and further modifies to cover it with a peptide (RGDS) derived from the protein fibronectin, which is an extracellular cellular matrix adhesion molecule (Example 5 and claims 12-18). Banes is silent about the oxygen-sensing compound. Stitt et al teach an oxygen sensing device in which a fluorescent compound is distributed throughout a silicone rubber phase that is permeable to oxygen gas but not to water and used as an oxygen sensor (Col 5 lines 37-41 and Example 6) and which is used in micro titer plates (Example 16). Stitt et al. teach the use of this device to determine the effect of growing microorganisms on the O<sub>2</sub> concentration of the growth medium. Stitt et al. further teach the use of their invention to monitor the effects of agents such as antibiotics on the growth of the microorganisms (claim 12). It would have been obvious for a skilled artisan at the time that the invention was made to combine the compositions of Banes with the oxygen-sensing device of Stitt to obtain the device of the invention with an excellent expectation of success. The Applicant would have been motivated to combine the two references to be able to ensure a lack of microbial contamination in the in the Banes apparatus via O<sub>2</sub> consumption, as taught by

Art Unit: 1647

Stitt, prior to inoculating with mammalian cells. Accordingly, the invention as claimed is *prima facie* obvious.

### **Conclusion**

6. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elly-Gerald Stoica whose telephone number is (571) 272-9941. The examiner can normally be reached on 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda G. Brumback can be reached on (571) 272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LORRAINE SPECTOR  
PRIMARY EXAMINER